Priority Concern: Ground Water

PRIORITY CONCERN: Ground Water

Water Management Plan Goal:
Protect groundwater resources from potential contamination related to residential, commercial and industrial land uses, well construction, abandoned wells and septic systems.

Water Management Plan Goal:
Protect, enhance and restore groundwater recharge areas.

Priority Concern

Geologic sensitivity, well construction, and land use influence the quality of ground and drinking water supplies. Drinking water in Blue Earth County is supplied by private wells and public water supply wells. Public water supply wells are regulated and monitored by the MDH. Private wells are regulated by the County in accordance with the State Well Code under a delegation agreement with the MDH. Areas with high potential susceptibility to ground water contamination due to shallow depth to bedrock or coarse soils have been identified by State agencies. Overall groundwater supply and quality data is lacking in Blue Earth County. There are currently no ground water monitoring program wells in the County and there is not a current geologic atlas for the County.

Protecting ground water resources from contamination by continuing the MDH-Delegated, County Well Code program and local land use regulations are high priorities. Providing targeted education of local government officials in areas with a high susceptibility to ground water contamination will be priorities of the Water Management Plan. The County also supports State efforts to complete a geologic atlas for Blue Earth County and expanded monitoring programs including ground water level monitoring wells and physical and chemical testing in Blue Earth County.

Priority Concern Assessment

Ground Water Quantity, Quality and Sustainability
Blue Earth County currently has a good availability of bedrock source ground water and a thick blanket of glacial till protecting the quality of the resource. Availability of ground water in sands and surficial sands is limited and moderate. Long term availability and sustainability of ground water is not certain and information regarding ground water recharge is needed.

With the exception of a few isolated and localized instances, the potable quality of the ground water has been maintained, even in areas with rural and urban development. The DNR has identified sensitive areas susceptible to ground water contamination based on soils and geologic data. There has not been a systematic quality assessment of ground water resources in Blue Earth County.

The need for more ground water information is reflected in the 2005 DNR Report to the Legislature on the *Sustainability of Minnesota's Ground Water: A Statement of Issues and Needs.*

Water Supply Wells
Public and private water supply wells in the County are sourced from many different aquifers as described in the Background Section of this plan. Most public water supply wells in Blue Earth County are in bedrock aquifers. The City of Mankato is an exception as the major volume of its drinking water is sourced from two, separate, shallow-aquifer wells located beneath the Blue Earth River and the Minnesota River. Source water protection plans are required for all public water supply wells. The MDH oversees and prepares source water assessment and protection plans.

Under a State delegation agreement, Blue Earth County's well program oversees all non-community well construction and well abandonment in accordance with the State Well Code.

Source Water Protection Plans
All wells are susceptible to contamination resulting from activities in the area where the well is located. This is particularity true for large public water supplies because the well's drawdown effect is much more pronounced than for small domestic wells. The consequences of contamination are potentially more catastrophic due to the number of people served by the system. For the purpose of national security, public access to wells and location information has been reduced in recent years.

The Safe Drinking Water Act of 1986 established the national wellhead protection program. This required each state to develop a program to "protect wellhead areas within their jurisdiction from contaminants which may have any adverse affects on the health of persons". The term wellhead protection area is defined as "the surface and subsurface area surrounding, a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field."

The MDH Wellhead Protection (WHP) Program received approval from the U.S. Environmental Protection Agency and has amended MN Rule Chapter 4720 to include WHP provisions. The MDH has developed a ranking scheme for phasing public water supplies into the program based on vulnerability and size of the population served. The MDH has worked with WHP for public water suppliers that added wells to their systems and voluntary projects. For public water supply wells serving up to 3,300 people, the MDH 1) delineates the wellhead protection area and 2) assesses vulnerability of the well and wellhead protection area.

The MDH completed a source water assessment for the City of Mankato and well vulnerability assessments for the other municipalities in the County. Community public water supply wells include all municipalities, nursing homes, subdivisions and similar uses with more than 15 service connections or to 25 persons served more than 60 days a year. Public water suppliers must prepare source water protection plans when notified by the MDH and phased into the program. The County provides assistance in the preparation of source water protection plans for public entities as requested.

In some Blue Earth County cities, aging water supply infrastructure is a concern due to taste and distribution system issues. Cities are replacing these systems with new wells and water lines when needed and as grants and loans are available. Source water protection plans are required when new municipal wells are constructed.

LOCAL PROGRAMS and WELLS

Blue Earth County Well Program

Blue Earth County administers a MDH-Delegated well program. The State well program was delegated to Blue Earth County in 1989. The County issues well construction permits, well abandonment permits, conducts construction and well sealing inspections, collects data and reports well log data to the MDH County Well Index. Well code construction requirements and restrictions vary in the County depending on local geology. The MDH regularly reviews the County's well program.

Sealing abandoned wells has been a high priority since the County's first water plan. The County continually funds a local well-sealing cost share program with $9,000-$10,000 annually.

From the start of the program in 1989 through 2007, the County permitted and inspected 1,628 new water wells, and 2,255 wells were sealed.

City of Mankato Public Water Supply Wells

The City operates many wells, including shallow and deep aquifer wells. The shallow aquifer wells provide most of the total water volume for the City of Mankato. The shallow aquifer wells are called Ranney Wells and are located below the Blue Earth River and the Minnesota River. Ranney Wells are technically not surface water wells; however, the river does influence water quality in the shallow aquifers below. The City monitors all drinking water supplies daily and provides quality drinking water meeting all Federal and State drinking water standards. The City is required to prepare a drinking water safety report to its citizens annually.

Even though a source water protection plan was not required by State rules for the Blue Earth River Ranney Well, the City worked with the MDH in preparation of a source water protection plan in 2003. According to the MDH *City of Mankato Source Water Assessment*, the MDH determined three source water protection areas with two main source water priority areas. These include:

> Inner Emergency Response Area is designed to help the City address contaminant releases which present an immediate health concern to users. This area was determined by the time required for the Mankato Water Department to shut off the Ranney Well and a buffer time limit needed to accommodate unanticipated delays in notification and shut down.

The inner-emergency response area is about 57 square miles and includes the lower reaches of the Blue Earth, Le Sueur and Watonwan Rivers located entirely within Blue Earth County and part of the Minnesota River upstream of the Blue Earth River located in Blue Earth and Nicollet County.

Outer Source Water Management Area is designed to protect water users from long term effects related to low levels of chemical contamination or the periodic presence of contaminants at low levels in surface waters. This area should protect users from contaminants which may be usually present at treatable levels or occasionally present an acute health under certain conditions such as low stage of the Blue Earth River.

The outer-source water management area is about 120 square miles and is described as the minor watersheds that either flow directly into the four rivers upstream of the inner-emergency response area or are adjacent to the inner-emergency response area. The outer-source water management area is located entirely within Blue Earth County and Nicollet County.

Watershed: The entire Greater Blue Earth River watershed and portions of the Minnesota River are also identified with a broad perspective in which to prioritize management efforts toward specific land uses that may impact the Ranney Well.

Maps displaying the source water protection area for the Blue Earth River Ranney Well are available from the City of Mankato or the MDH.

The main pollutants of concern include suspended solids, nitrate-nitrogen, pathogenic microorganisms and pesticides. The sources of contaminants are diverse. The MDH *City of Mankato Source Water Assessment* identified 348 potential contaminant sources including pipeline, highway, railroad river crossings and parallels; above- and below-ground petroleum storage tanks; agriculture chemical facilities; animal feedlots; and hazardous waste storage facilities.

The Minnesota River Ranney Well was constructed in 2007, and a source water protection plan will be prepared as required by the MDH.

The Ranney Wells conserve deep aquifer resources and require less energy to operate compared with deep aquifer wells. The City of Mankato also operates a special water conservation facility as part of the wastewater treatment plant. This project is described in the Wastewater Section of the Water Management Plan and more information is available from the City of Mankato.

SENSITIVE GROUND WATER AREAS

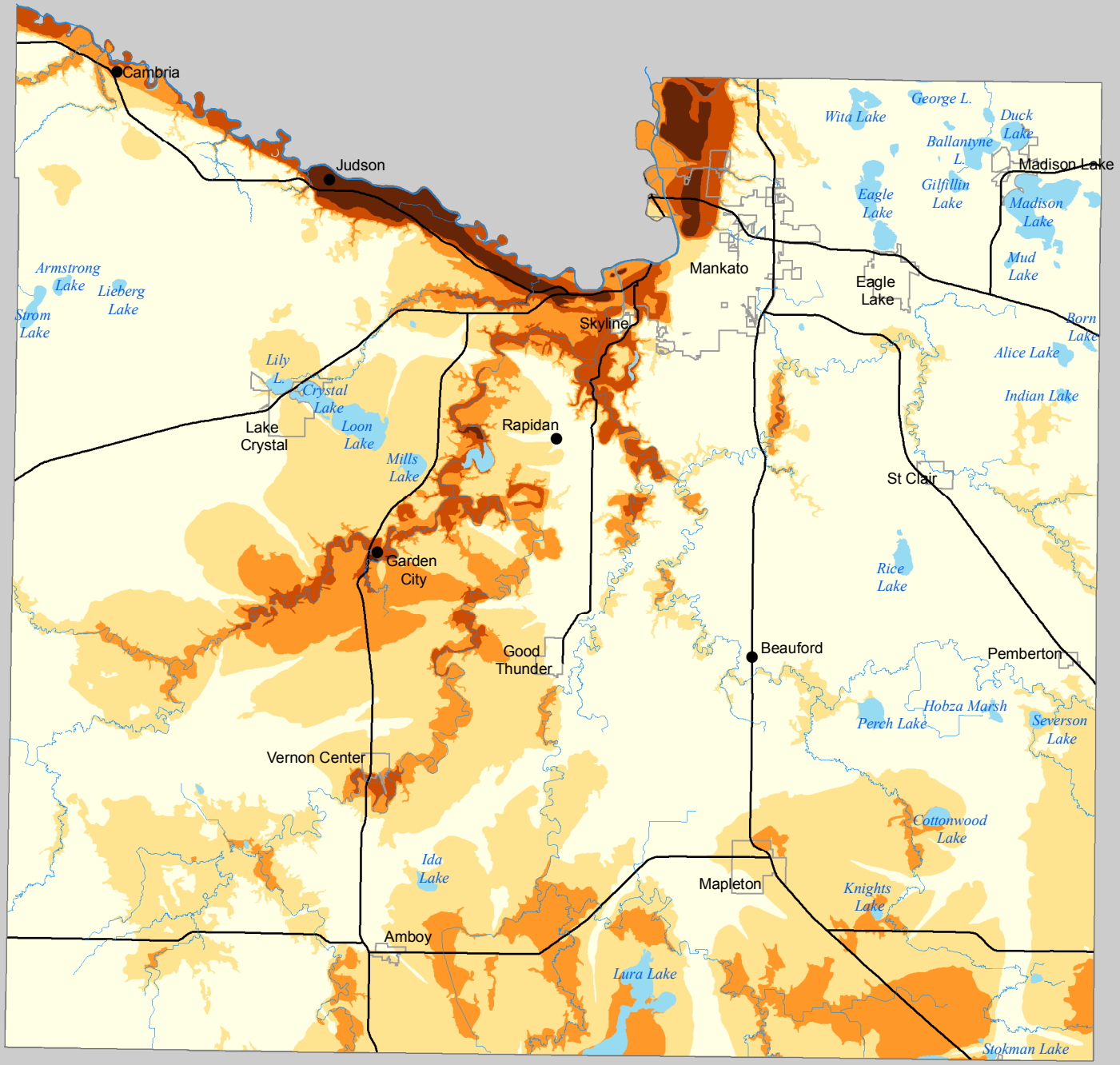
The most geological sensitive area in Blue Earth County is found along the Minnesota River, where areas of shallow soil or exposed bedrock are found on the river terraces. A limestone bedrock area extends from within the City of Mankato and Mankato Township north into Lime Township and Le Sueur County to the area known as the “Kasota Prairie.” These areas were settled early in the County’s history and continue to develop due to close proximity to the City of Mankato and transportation linkages including

railways. The current land use is diverse with rock quarries, heavy industrial uses and residential development. Map 22 displays depth to bedrock in Blue Earth County.

Similar, if not as dramatic, conditions exist along the Minnesota River Valley upstream from the City of Mankato in South Bend, Judson and Cambria Townships. In Cambria Township only small portions of the actual river bottom are included in the sensitive bedrock area. Sand and gravel deposits on the river terraces present their own problems related to well construction and localized concerns relating to potential ground water contamination.

Isolated bedrock exposures are also found along the lower portions of the Blue Earth and Le Sueur River Valleys. The outcroppings of sandstone are normally associated with the actual river channel and are covered with deep soils close to the channels.

Map 22. Depth to Bedrock



Depth to Bedrock

- Less than 1 foot
- 1 - 50 Feet
- 50 - 100 Feet
- 100 - 150 Feet
- More than 150 Feet
- Lake
- Protected Stream or River
- State or U.S. Highway
- City

0 5 Miles

BLUE EARTH COUNTY

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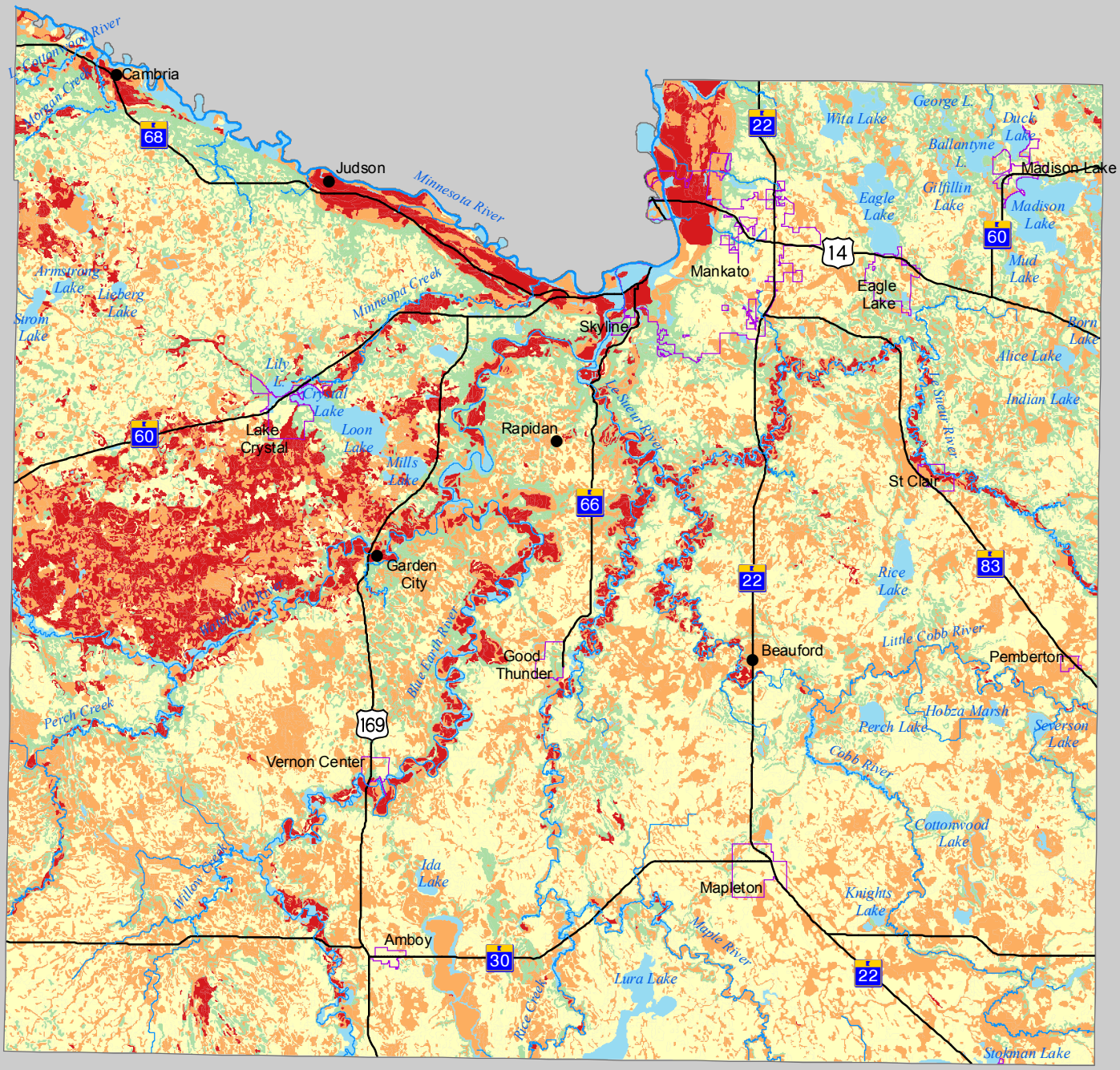
Prepared By: Blue Earth County
Environmental Services
October 2007

Source: Depth to Bedrock- Mankato State University
Water Resources Center

Map 23 displays Level I Geologic Sensitivity Rating for the County. A Level 1 assessment examines geologic conditions to a depth of about 5 feet below the land surface and uses soil survey information prepared by the NRCS. DNR Waters has completed a statewide Level 1 preliminary assessment of geologic sensitivity for each of the soil map units in the State. The assessment is based on the assumption that the material to a depth of about 5 feet below the land surface is representative of the entire vadose zone, the unsaturated material above the water table. Many factors or conditions that affect geologic sensitivity and that lie at depths greater than 5 feet cannot be identified by this assessment level. A Level 1 assessment addresses potential ground-water contaminants that originate at the land surface. It does not assess the pollution potential of contaminants that originate below the surface, such as underground storage tanks or improperly constructed wells. (DNR)

Map 23. Level 1 Geologic Sensitivity Rating



State or U.S. Highway

City

Level 1 Geologic Sensitivity

- Low
- Moderate
- High
- Very High
- No Value

Prepared By: Blue Earth County
Environmental Services
October 2007

Source: Level 1 geologic sensitivity ratings from MN DNR for each soil type(USDA NRCS SSURGO Soils). "A Level 1 assessment examines geologic conditions to a depth of about 5 feet below the land surface. The assessment is based on the assumption that the material to a depth of about 5 feet below the land surface is representative of the entire vadose zone, the unsaturated material above the water table. Many factors or conditions that affect geologic sensitivity and that lie at depths greater than 5 feet cannot be identified by this assessment level. A Level 1 assessment addresses potential ground-water contaminants that originate at the land surface. It does not assess the pollution potential of contaminants that originate below the surface, such as underground storage tanks or improperly constructed wells." MNDNR

BLUE EARTH COUNTY

Shallow soil depth to bedrock
The Mankato Township and Lime Township terrace areas have small localized outcroppings of limestone with the remainder overlain with shallow Copastan Sandy Loam. The Jordan Sandstone outcrops in one area of a residential development at the terrace edge. The surface of the Limestone is eroded and small scattered areas of deeper sandy soils are present throughout this area. A deep channel of deposited soils exists along much of the eastern border of this terrace within Blue Earth County and appears to be separating this shallow limestone area from the Limestone aquifer that extends east from the river valley. The general ground water flow is towards the Minnesota River which may be a more important explanation for the good water quality seen in the eastern portion of the Limestone aquifer.

This shallow Limestone area has documented water quality problems related to localized petroleum spills and more widespread nitrate contamination due to previous land use activities including agricultural application of manure and application of municipal sewage sludge. The State Well Code prohibits the use of this aquifer for drinking water supplies. The underlying Jordan Formation continues to yield potable water and the Well Code requires special well construction techniques to provide additional protection of this aquifer.

The geomorphology of the valley areas in South Bend Township and Judson Township is more diverse. The limestone is absent in much of the valley floor in South Bend Township but is a dominant feature in South Bend Townsite, which is situated on a terrace. There are also outcroppings of sandstone along the upper terrace areas which may be a remnant of the Jordan Formation. South Bend Township is also a historic area with relatively dense urban development and a multitude of past and current land uses which have impacted surficial water quality.

The Judson Valley is also an area of shallow soils overlying the St. Lawrence confinement unit. Locally isolated areas of deeper deposited soils can be found and some areas are wet due to reduced infiltration as a result of the St. Lawrence confinement unit, creating wetland areas on the terrace.

The area identified in Cambria Township is largely undeveloped and represents basically the valley floor. Numerous oxbow lakes and other river influences, including flooding, are evident. Due to the evident erosional forces of the Minnesota River and lack of actual data from well construction, it is unclear what remains of the bedrock formations. The Geological Atlas indicates the first bedrock is the Franconian or Ironton-Galesville. The terraces are largely comprised of significant deposits of sands and gravel.

Well Drilling Implications in Sensitive Areas
Minnesota Rules Chapter 4725 Rules Relating to Wells and Borings, is the "State Well Code". While Blue Earth County has been delegated this program, the construction requirements for water supply wells is the State Well Code. In geologically sensitive areas this code requires special construction techniques to ensure the development of both safe water supplies and to prevent the possible future contamination of other aquifers. A limestone aquifer which is not covered with at least 50 feet of unconsolidated material or firm insoluble rock cannot be used as a water supply. This applies to all water supplies located within one mile from the shallow limestone formation. When drilling through this shallow limestone formation to reach a deeper aquifer, an oversized hole must be drilled and the space between the well casing and the rock must be sealed with neat cement grout. This prevents downward migration of potentially contaminated water to deeper aquifers. It also adds significant well construction costs for the consumer to insure a safe potable water supply today and in the future.

Flowing Wells
Although not considered geologically sensitive areas by virtue of the soil cover, there are three general areas of the county where flowing wells present special circumstances relative to well construction and ground water conservation. These areas are generally described as:

Hungry Hollow: Hungry Hollow describes an area south of Mankato which is situated along the Le Sueur River in Sections 33 and 34 of Mankato Township (T108N-R26W) and Section 3 and 4 of Decoria Township (T107N-R26W). This river bottom is capable of producing 500 gallons per minute flows from five inch domestic wells. Double cased and grouted well construction must be employed to ensure the flow can be safely contained.

Big Cobb River: The Big Cobb River Valley, in the vicinity of the unincorporated community of Beauford has numerous small flowing wells that are developed in the glacial drift. While none have significant flows it is an area requiring special well construction. The unrestricted flow from old existing flowing wells is a waste of the ground water resource.

Maple River: A significant portion of the Maple River system that flows through Mapleton and Sterling Townships also has several small flow glacial drift wells. The situation is similar to those found in the Beauford area.

Well Advisory Area
The Minnesota Department of Health is the agency responsible for regulating wells and borings for the purpose of protecting public health and ground water supplies. A well advisory is a mechanism utilized to control the drilling or alteration of public and private wells in an area where ground water contamination has, or may, result in risks to the public health. The purposes of an advisory are to inform the public of potential health risks, provide for the construction of safe water supplies, and prevent the spread of contamination due to improper drilling of wells or borings. Contractors proposing to drill any well or boring in a well advisory area must contact the Minnesota Department of Health, Well Management Unit prior to construction.

There is one well advisory area in Blue Earth County titled LeHillier.

LeHillier Special Well Construction Area

LeHillier is a small unincorporated area located along US Highway 169/60, just across the Blue Earth River from the City of Mankato, in South Bend Township, near the confluence of the Blue Earth and Minnesota Rivers. LeHillier consists of residential, light and heavy industrial, commercial, and highway business land uses.

In 1981, following a tip on the Minnesota Pollution Control Agency (MPCA) "hotline" about dumping of hazardous wastes, ground water contamination was verified. Major contaminants detected in the drift and alluvium and some bedrock wells were nitrates and volatile organic chemicals (VOCs), primarily trichloroethylene. The Minnesota Pollution Control Agency initiated several superfund studies for identifying the source of the contamination and furnishing the residents of the area a safe water supply. Residents of the area were advised to use alternative drinking water sources.

In September of 1981, licensed well contractors working in the Mankato area were advised that contaminated wells not be deepened or new deeper wells be constructed until the source, extent, nature and hydraulics of the contamination was known. The advisory area is in parts of Section 14 and 23, T108N-R27W, Blue Earth County, bounded by Hawley Street on the west and the Blue Earth River on the east, and south and the Minnesota River on the north. This well construction advisory remains in effect today.

At the time of the advisory, there was no central water supply or wastewater treatment system serving the LeHillier community. Most of the 200 dwellings in the area were supplied by individual drive-point wells driven to approximately 30 feet in depth. A few homes had wells cased to the St. Lawrence confining layer with open-hole construction into the Franconia or Ironton aquifer. Many of the individual sewage disposal systems consisted of septic tanks and leaching wells in the Alluvial Sands.

LeHillier received a grant and constructed a community public water supply managed by South Bend Township

LeHillier received a grant and constructed a community public water supply managed by South Bend Township. A wastewater collection system was also constructed and wastewater is treated at the City of Mankato's POTW. No contamination was found in the City of Mankato's shallow aquifer Ranney well located down gradient from LeHillier; however, as a condition of allowing the construction of a sanitary sewer collection system, the City of Mankato required assurances that 1) the contamination would be cleaned up, and 2) to reduce potential for future contamination all subsurface wastewater discharges be discontinued up-gradient from the well field.

A program was implemented to seal multi-aquifer wells to prevent contamination of the Franconia-Ironton-Galesville aquifer. However, the Minnesota Department of Health did not ensure that all wells in the area were properly sealed in accordance with Minnesota Rules. Although mostly shallow wells, unsealed wells continue to be found in the area and are sealed under the County Well Program as discovered.

A remedial study was completed involving numerous monitoring wells and pump out wells. For many years, these wells were used along with U.S. Corp of Engineers flood control wells to pump contaminated water from the area. The pump out water was air stripped of VOC's and discharged to the Blue Earth River. Monitoring of the area continued. Over the years, monitoring wells were sealed when no longer needed. In 2006 and 2007 six of the pumpage wells and 15 monitoring wells were sealed. In 2007, the MPCA determined no further action was required. MPCA continues to monitor the site.

The well construction advisory remains in effect for this Superfund site.

WATER USE

Water use and ground water recharge have become a growing concern as general awareness of the value and limited availability of quality ground water increases. When compared with other natural resources needs and services, access to good quality drinking water is the number one priority for most people. Heavy water users, including for the production of ethanol recently, has raised concerns. Use of good quality ground water aquifers for snow making and irrigation of vegetation other than crops is also criticized. A greater understanding of ground water supplies at the local, County and regional scale is needed to develop plans and policy to protect ground water. The DNR is responsible for water use and appropriation, and water appropriation permits are required for users of a certain size.

Irrigation

Blue Earth County receives an average of 29 inches of precipitation per year. Irrigation is not a wide spread practice in the County for typical row crop agriculture. Where it is most often utilized is in the glacial outwash area south and west of the City of Lake Crystal where coarse soils are found and along the major river courses where coarse droughty soils predominate. Even then the use is limited to late summer applications primarily for corn production during the stress periods and during ear setting. If timely rainfalls occur irrigation may not be required at all.

The irrigation wells generally obtain their water from drift aquifers. Along the river bottoms, the adjoining stream is the water source. Exceptions occur and during 1996 an irrigation well was drilled to the Mt. Simon Sandstone for the purpose of irrigating a tree farm.

DNR Water Appropriation Permits

Minnesota's water appropriation law was first enacted in 1937. The purpose of the original act was to establish a water policy for the state and a permit system to regulate water users. This appropriation law is based on the English common law doctrine of "riparian rights" modified by the concept of "reasonable use". Under this system, the owner of the land abutting a surface water body or overlying a ground water source has the right to make "reasonable use" of the water, subject to the equal rights of other riparian owners to use the water for similar purposes.

The Department of Natural Resources (DNR) plays a critical role in protecting ground water resources. Part of their responsibility is to control and monitor the utilization of both the ground and surface water for all purposes. The Water Appropriation Permit

System is designed to control the use of the resource and to ensure that water use conflicts are avoided if possible. In 1973, the Minnesota Legislature established a priority system for water use to allocate water equitably to riparian owners when a water supply was limited. This priority system was revised in 1989 by the Legislature with the first priority being domestic water supplies and contingency power production as specified by law.

> 103G.261 WATER ALLOCATION PRIORITIES.
> (a) The commissioner shall adopt rules for allocation of waters based on the following priorities for the consumptive appropriation and use of water:
>
> (1) first priority, domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets the contingency planning provisions of section 103G.285, subdivision 6;
> (2) second priority, a use of water that involves consumption of less than 10,000 gallons of water per day;
> (3) third priority, agricultural irrigation, and processing of agricultural products involving consumption in excess of 10,000 gallons per day;
> (4) fourth priority, power production in excess of the use provided for in the contingency plan developed under section 103G.285, subdivision 6;
> (5) fifth priority, uses, other than agricultural irrigation, processing of agricultural products, and power production, involving consumption in excess of 10,000 gallons per day; and
> (6) sixth priority, nonessential uses.
>
> (b) For the purposes of this section, "consumption" means water withdrawn from a supply that is lost for immediate further use in the area.
> (c) Appropriation and use of surface water from streams during periods of flood flows and high water levels must be encouraged subject to consideration of the purposes for use, quantities to be used, and the number of persons appropriating water.
> (d) Appropriation and use of surface water from lakes of less than 500 acres in surface area must be discouraged.
> (e) The treatment and reuse of water for non-consumptive uses shall be encouraged.
> (f) Diversions of water from the state for use in other states or regions of the United States or Canada must be discouraged.

The DNR requires all large users of water to obtain water appropriation permits and report usage annually.

In 2007 the DNR had water appropriation permits for these non-domestic or non-municipal water ground water users in Blue Earth County:

Snow Making
Mount Kato Ski Area

Irrigation
St Clair Public School (landscaping/athletic fields)
Mankato Golf Club (golf course)
Minneopa Golf Club (golf course)
Fairview Golf Club (golf course)

Eldon and Helen Jones (golf course)

Crop Irrigation
R. Wynn Kearney Jr. (crop irrigation)
Weerts Company (crop irrigation)
Pioneer Hi-Bred International (crop irrigation)
E P McMonagle (crop irrigation)
Robert Sandt (crop irrigation)

Mining
Vetter Stone (mine processing not sand and gravel washing)
Minnesota Quarries (sand and gravel washing)
Southern Minnesota Construction

Industrial
Midwest Electric (metal processing)
Hiniker Company (non-metallic processing)
Sisters of Notre Dame (commercial and institutional)
Mankato Golf Club (commercial and institutional)

Food
Cenex Harvest States Cooperative

Ethanol
A water appropriations permit is not needed for the ethanol plant near Lake Crystal because its water is supplied by the City of Lake Crystal municipal wells.

IMPLEMENTATION PLAN
Ground Water

Water Management Plan Goal:
Protect groundwater resources from potential contaminants from residential, commercial and industrial land uses, well construction, abandoned wells and septic systems.

Water Management Plan Goal:
Protect, enhance and restore groundwater recharge areas.

GUIDING PRINCIPLES
» The drinking water supply in Blue Earth County is good quality, and there is currently a good availability of glacial drift and bedrock ground water resources.
» Maintaining a good supply of high quality drinking water is the highest priority in Blue Earth County.
» The MDH, DNR, MPCA and MDA are responsible for various aspects of ground and drinking water quality management, including setting standards, monitoring quality and use, and regulations.
» The MDH completed a source water assessment plan for the City of Mankato's pre-2007, shallow aquifer, Ranney wells and determined these wells susceptibility to contamination as medium to high.
» The DNR identified areas in Blue Earth County with shallow depth to bedrock, coarse soils and increased susceptibility for ground water contamination.
» The potential for ground water contamination is reduced with good well construction and proper sealing of unused and abandoned wells.
» Blue Earth County is delegated by the MDH to administer the State Well Code for non-community well construction, including inspections, permits, enforcement, data management and reporting to the MDH County well index.
» Land use regulations can protect water quality by limiting the location and type of development with respect to geologic features and well location.
» Ground water quality monitoring data, technical information and aquifer condition is lacking in Blue Earth County.
» To better protect ground water resources in Blue Earth County, more detailed, current information regarding ground water quantity and quantity is needed for land use, infrastructure and natural resources related planning and policy.
» The County supports MGS, DNR and other State agency programs to expand technological, data and monitoring efforts including a geologic atlas for Blue Earth County and regional aquifers, establishing observation monitoring wells, and analysis of aquifers.

ONGOING PROGRAMS:
The County will continue to protect ground water resources and drinking water quality by operating the MDH-Delegated County Well Code program, including permitting and inspecting all new well construction and properly sealing abandoned wells. The County will continue to protect ground water resources with administration of local land use ordinances, including permits and site evaluation involving well set back verifications for

new and existing wells. The SWCD, County and NRCS will continue to coordinate well sealing cost share to maximize available cost share dollars for all water management programs.

The County well program is funded by permit fees and the County budget. The well sealing cost share program is funded by permit fees, the County budget and landowner cash match. There is no State support for County well programs.

WATER MANAGEMENT PLAN:

Beyond existing ongoing programs, what can be achieved during the planning period is limited by financial and staff resources. Distributing information, primarily to local government officials, to increase awareness of the potential for ground water contamination and how to protect ground water will be the highest priority during the planning period. The County will be addressing and encouraging other local governments to incorporate ground water protection in land use plans and regulations. The County participates in preparation of source water protection plans at the request of local government and the MDH. Identifying priority ground water recharge areas is a high priority, but more information is needed.

The County supports the DNR's *Sustainability of Minnesota's Ground Water: Statement of Issues and Needs as reported to the Minnesota Legislature in June 2005* which includes a list of technical and monitoring needs as wells as planning and regulatory needs. The County especially supports the following changes included in the DNR report:

1) Complete geologic mapping of aquifers or potential aquifers at county scale using modern tools.
2) Compile up-to-date regional and statewide aquifer maps.
3) Accelerate physical and chemical testing of aquifers.
4) Restore measurement frequency and expand ground-water level monitoring network to develop water-level data for aquifers in areas of increasing ground water demand.
5) Construct new ground-water level monitoring wells in selected locations to enhance the capability to anticipate needed information and monitoring.
6) Expand and coordinate precipitation, stream flow, ground-water quality, and lake level monitoring to fully examine the impacts of actual or potential ground-water withdrawals.
7) Analyze and report information by aquifer including an evaluation of the impacts of withdrawals.
8) Recognize, monitor and describe the impacts of surface activities on ground water quality.
9) Continue sub-regional and regional water supply planning and expand participation to more stakeholders.

Objective 1: The County will continue the Well Program.

Action 1: Blue Earth County will permit and inspect construction of new domestic wells and sealing of unused and abandoned wells.

Action 2: The County will continue to fund the well sealing cost share program with at least $9,000 annually.

Objective 2: Increase local government's awareness of the potential for ground water contamination susceptibility in Blue Earth County.

Action 1: The County will work with Township officials providing data and information related to ground water contamination susceptibility and groundwater protection methods, including zoning, with a special focus on Lime Township and Mankato Township because of their unique position having local zoning authority and their location in areas with high susceptibility to ground water contamination due to shallow soil depth to bedrock.

Action 2: The County will provide data and information related to ground water contamination susceptibility and groundwater protection strategies to local government officials, including municipalities.

Objective 3: The County will incorporate ground water protection measures in land use planning and regulations.

Action 1: The County will address ground water protection, source water protection plans and land use in the update of the County Comprehensive Land Use Plan.

Action 2: The County will address ground water protection measures in land use policy at the local level with special attention to business use and storage of potentially hazardous chemicals and materials and subsurface wastewater treatment and disposal.

Objective 4: The County will assist local government units with preparation of source water protection plans.

Action: The County will assist all local government units and the MDH with preparing source water protection plans as requested by participating in planning teams and providing available data and information including maps and aerial photos and County well index data.